

This listing of claims will replace all prior versions, listings, of claims in the application:

**Listing of Claims:**

1. (currently amended) A polymer-based ammunition, comprising:  
a composite material including  
a polymer matrix including at least one thermoplastic elastomeric polymer (TPE) component, and at least one soft elastomeric polymer component that at ambient temperatures is above its glass transition temperature;

particles of a sufficiently high specific gravity material that are dispersed in the polymer matrix and present in an amount such that the composite material has a specific gravity of in a range from about 2 to 3 ~~grams per cubic centimeter~~; and  
the composite material having a shape of a pre-selected projectile.

2. (currently amended) The polymer-based ammunition according to claim 1 wherein the ~~thermoplastic elastomeric polymer (TPE) component comprises a block copolymer having at least one elastomeric block~~ soft elastomeric polymer component is selected from the group consisting of polyisobutylene, polyisobutylene-isoprene copolymers, polyisobutylene-styrene copolymers, polyisobutylene- alkyl styrene copolymers, halogenated polyisobutylene- alkyl styrene terpolymers, polybutadiene, polyisoprene, polyethylene-propylene copolymers, polyethylene-propylene diene terpolymers.

3. (original) The polymer-based ammunition according to claim 2 wherein the thermoplastic elastomeric polymer (TPE) component is selected from the group consisting of polystyrene-polyisobutylene block copolymers, polystyrene-polybutadiene block copolymers, polystyrene-polyisoprene block copolymers, polystyrene-poly(ethylene-butylene block copolymers, polystyrene-poly(ethylene-propylene) block copolymers, thermoplastic polyolefins (TPOs), and dynamically vulcanized TPVs.
4. (currently amended) The polymer-based ammunition according to claim ~~[[1]]~~ 2, wherein the thermoplastic elastomeric polymer (TPE) component has a structure an architecture selected from the group consisting of linear, star, arborescent, comb, brush, centipede, hyperbranched, and dendritic.
5. (currently amended) The polymer-based ammunition according to claim ~~[[1]]~~ 2, wherein the elastomeric polymer component is selected from the group consisting of ~~polyisobutylene, polyisobutylene-isoprene copolymers, polyisobutylene-styrene copolymers, polyisobutylene-alkyl styrene copolymers, halogenated polyisobutylene-alkyl styrene terpolymers, polybutadiene, polyisoprene, polyethylene-propylene copolymers, polyethylene-propylene diene terpolymers~~ thermoplastic elastomeric polymer (TPE) component comprises a block copolymer having at least one elastomeric block.
6. (currently amended) The polymer-based ammunition according to claim ~~[[1]]~~ 2, wherein the soft elastomeric polymer component is polyisobutylene, and wherein the

thermoplastic elastomeric polymer (TPE) component is ~~polystyrene-polyisobutylene-~~  
~~polystyrene~~ poly(styrene-b-isobutylene-b-styrene).

7. (currently amended) The polymer-based ammunition according to claim **[[1]] 2**,  
wherein the soft elastomeric polymer component is a polyisobutylene-isoprene  
copolymer, and wherein the thermoplastic elastomeric polymer (TPE) component is  
~~polystyrene-polyisobutylene-polystyrene~~ poly(styrene-b-isobutylene-b-styrene) (SIBS).

8. (currently amended) The polymer-based ammunition according to claim **[[1]] 2**,  
wherein the soft elastomeric polymer component is present in an amount from about  
10% to about 90% by weight of the polymer matrix, and wherein the thermoplastic  
elastomeric polymer component is present in an amount from about 90 to about 10% by  
weight of the polymer matrix.

9. (currently amended) The polymer-based ammunition according to claim **[[1]] 2**,  
wherein the soft elastomeric polymer component is present in an amount from about  
40% to about 60% by weight of the polymer matrix, and wherein the thermoplastic  
elastomeric polymer component is present in an amount from about 60 to about 40% by  
weight of the polymer matrix.

10. (currently amended) The polymer-based ammunition according to claim **[[5]] 2**  
wherein the elastomeric polymer component has ~~a structure~~ an architecture selected

from the group consisting of linear, star, arborescent, comb, brush, centipede, hyperbranched and dendritic.

11. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** , wherein the specific gravity of the composite material is at least about 2.44 grams-per cubic-centimeter.

12. (currently amended) The polymer-based ammunition according to claim **[[1]] 2**, wherein the high specific gravity material is present in the composite material in an amount of from about 50 to about 90% by volume of the total composite.

13. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** , wherein the high specific gravity material is present in the composite material in an amount of from about 60 to about 80% by volume of the total composite.

14. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** wherein the high specific gravity material is present in the composite material in an amount of from about 10 to about 90% by volume of the total composite.

15. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** wherein the composite material has a cylindrical or spherical shape.

16. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** having a hardness value, as measured according to the Shore A scale, in a range of from about 15 to about 80.
17. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** having a hardness value, as measured according to the Shore A scale, in a range of from about 30 to about 55.
18. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** wherein the particles of a high specific gravity material are selected from the group consisting of iron powder, tungsten, copper, bismuth, and iron oxide.
19. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** wherein the particles of a high specific gravity material are iron powder particles.
20. (currently amended) The polymer-based ammunition according to claim 19 wherein the iron powder particles have sizes in a range from about 71.4% of -100 to +325 U.S. Mesh and 23.2% of -325 U.S. Mesh, and a specific gravity **[[,]]** of  $7.8 \text{ gcm}^{-3}$ .
21. (currently amended) The polymer-based ammunition according to claim **[[1]] 2** produced by molding the composite material into any one of a cylindrical or spherical shape.

22. (original) The polymer-based ammunition according to claim 21 wherein the step of molding is one of injection molding and compression molding.

23. (currently amended) The polymer-based ammunition according to claim ~~[[1]]~~ 2 wherein the composite material has a dynamic mechanical compression creep below a threshold creep so that the polymer-based ammunition maintains its shape.

24. (original) The polymer-based ammunition according to any one of claim 23 wherein said threshold dynamic mechanical compression creep is about 20%.

25. (original) The polymer-based ammunition according to claim 23 wherein dimensions of the composite material do not change more than 10% for at least a year.

26. (currently amended) The polymer-based ammunition according to claim ~~[[1]]~~ 2 wherein the composite material has a dynamic mechanical compression creep between 4 and 20% creep.

27. (currently amended) A composite material, comprising:

a polymer matrix including at least one thermoplastic elastomeric polymer (TPE) component, and at least one soft elastomeric polymer component that at ambient temperatures is above its glass transition temperature, the thermoplastic elastomeric polymer (TPE) component including a block copolymer having at least one elastomeric

block, the material characterized in that it exhibits a dynamic mechanical compression creep below a threshold creep so that the composite material maintains its shape.

28. (previously presented) The composite material according to claim 27 wherein the thermoplastic elastomeric polymer (TPE) component is selected from the group consisting of polystyrene-polyisobutylene block copolymers, polystyrene-polybutadiene block copolymers, polystyrene-polyisoprene block copolymers, polystyrene-poly(ethylene-butylene block copolymers, polystyrene-poly(ethylene-propylene) block copolymers, thermoplastic polyolefins (TPOs), and dynamically vulcanized TPVs.

29. (currently amended) The composite material according to claim 27 wherein the soft elastomeric polymer component is selected from the group consisting of polyisobutylene, polyisobutylene-isoprene copolymers, polyisobutylene-styrene copolymers, polyisobutylene- alkyl styrene copolymers, halogenated polyisobutylene-alkyl styrene terpolymers, polybutadiene, polyisoprene, polyethylene-propylene copolymers, polyethylene-propylene diene terpolymers.

30. (currently amended) The composite material according to claim 27, wherein the thermoplastic elastomeric polymer (TPE) component and the soft elastomeric polymer component have a structure selected from the group consisting of linear, star, arborescent, comb, brush, centipede, hyperbranched, and dendritic.



31. (currently amended) The composite material according to claim 27, including particles of a high specific gravity material that are dispersed in the polymer matrix and present in an amount such that the composite material has a specific gravity of in a range from about 2 to 3 ~~grams per cubic centimeter~~.

32. (original) The composite material according to claim 31 wherein the particles of a high specific gravity material are selected from the group consisting of iron powder, tungsten, copper, bismuth, and iron oxide.

33. (original) The composite material according to claim 31 wherein the particles of a high specific gravity material are iron powder particles.

34. (currently amended) The composite material according to claim 27 wherein the soft elastomeric polymer component is one of polyisobutylene and polyisobutylene-isoprene copolymer.

35. (previously presented) The composite material according to claim 27 wherein said threshold dynamic mechanical compression creep is about 20%.

36. (previously presented) The composite material according to claim 27 which has a dynamic mechanical compression creep between 4% and 20% creep.



37. (previously presented) The composite material according to claim 27 wherein dimensions of the composite material do not change more than 10% for at least a year.